REMARKS

Claims 2-16 and 28-33 have been examined and all stand rejected. Claims 1 and 17-27 are subject to a final restriction requirement. In response to this final restriction requirement, Applicants now cancel claims 1 and 17-27 so that they may be prosecuted in a continuation or divisional application. No new matter is included in this Amendment, no claims have been added or canceled, and thus and no additional claim fees are due as a result of this Amendment. Attached hereto as Appendix A captioned "Version with Markings to Show Changes Made" is a marked-up version of the changes made to claim 12 by the current amendment.

Amendment of Claim 12 to Correct a Typographical Error

Claim 12 has been amended to insert the word "probes" as follows: "the plurality of microarrays include synthesized probe arrays wherein the probes comprise oligonucleotides." Applicants believe that the word "probes" was dropped in the course of electronic filing as Applicants' attorney has observed that such apparently random dropping of words has occasionally occurred during this process. Although these errors, apparently due to glitches in the PASAT program, are usually corrected by manual review, this inadvertent dropping of a word apparently went undetected. In any case, the correction of this typographical error does not introduce new matter and is fully supported by the specification, *e.g.*, at paragraph 0010.

Election of Group II without traverse

In view of the Examiner's decision in the Office Action of 9/25/02 to make the restriction requirement final, Applicants hereby retract their election of claims 2-16 and 28-33 with traverse and now elect claims 2-16 and 28-33 without traverse.

Claim Rejections – 35 USC §102(b)

Claims 2 and 8-15 have been rejected under 35 USC §102(b) as being anticipated by Rava, *et al.*, U.S. No. 5,545,531. Applicants respectfully traverse these rejections and request reconsideration.

Rava describes methods for concurrently processing multiple biological chip assays by "providing a biological chip plate comprising a plurality of test wells, each test well having a

biological chip having a molecular probe array; introducing samples into the test wells; subjecting the biological chip plate to manipulation by a fluid handling device that automatically performs steps to carry out reactions between target molecules in the samples and probes; and subjecting the biological chip plate to a biological chip plate reader that interrogates the probe arrays to detect any reactions between target molecules and probes." (Abstract.) Various methods for forming test wells are described (e.g., col. 2, lines 46-61). The term "biological chip plate" is stated as being intended to have the following general meaning: "A device having an array of biological chips in which the probe array of each chip is separated from the probe array of other chips by a physical barrier resistant to the passage of liquids and forming an area or space, referred to as a 'test well,' capable of containing liquids in contact with the probe array."

Independent claim 2 is directed to an apparatus for processing a plurality of microarrays disposed on a substrate. The apparatus includes one or more containing members constructed and arranged to contain the substrate. The apparatus also includes a separating member constructed and arranged so that, "when the separating member is disposed in a first position with respect to the containing members, at least two of the plurality of microarrays are fluidically separated from each other by the separating member, and when the separating member is disposed in a second position with respect to the containing members, the at least two microarrays are fluidically coupled with each other."

The Examiner states that these elements of claim 2 are to be found in Rava at column 8, lines 1-21, and Figs. 4 and 5. Applicants respectfully disagree and assert that these elements are neither taught nor suggested at the indicated places or elsewhere in Rava.

Because elements of claim 2 are missing from Rava, claim 2 is patentable. Moreover, since claims 8-15 all depend from claim 2, they also are patentable for at least the same reasons stated above with respect to claim 2. Applicant therefore requests that the rejections of claims 2 and 8-15 as anticipated by Rava under 35 USC §102(b) be withdrawn.

Claim Rejections – 35 USC §102(e)

Claims 2-9, 12, 14, 16, and 28 have been rejected under 35 USC §102(e) as being anticipated by Schembri, *et al.*, U.S. No. 6,258,593. Applicants respectfully traverse these rejections and request reconsideration.

Schembri generally is directed to "providing an apparatus for conducting chemical or biochemical reactions on a solid surface within an enclosed reaction chamber." (Col. 4, lines 28-30.) Regarding claim 2, the Examiner states that Schembri discloses, *inter alia*, the following element of claim 2: "when the separating member is disposed in a second position with respect to the containing members, the at least two microarrays are fluidically coupled with each other." In particular, the Examiner states that this element is disclosed at column 10, line 57 to column 11, line 37; Figs. 1 and 2; and claims 1-18. Applicants respectfully disagree that the quoted element of claim 2 is disclosed at the indicated places (nor are they disclosed elsewhere). At the indicated portion of the specification from column 10, line 57 to column 11, line 37, Schembri states the following (emphasis added):

> "In FIGS. 1 and 2, base 1 is shaped to receive a substrate 2 upon which cover 3 may be fitted. The substrate 2 may be comprised of glass, fused silica, silicon, plastic, or other material, but is preferably comprised of glass. FIG. 1 also shows optional gasket 4 that may be placed between the cover 3 and a housing 5 which holds the cover 3 in place; the housing 5, when screws (13) are tightened in their holes (7), is effective to apply pressure **so as to improve the seal** between the cover 3 and the substrate 2. Substrate 2 is held stably in the assembled apparatus, which provides **a tightly sealed chamber** adjacent the reaction area of the substrate 2 upon which molecular probes are arrayed. The seal between the cover 3 and the substrate 2 **is effective to retain reactant solutions** and to prevent drying out of the contents of the reaction chamber.
>
> The reaction chamber is formed by bringing the inner surface of the cover 3 into contact with the upper surface of the substrate 2. The inner surface of the cover 3 is comprised of the lip 8 and the recess 9. FIG. 2 shows the inner surface of the cover 3 exposing the lip 8 and recessed portion 9. Upon placement of the cover 3 onto the substrate 2, the lip 8 makes contact with the upper surface of substrate 2. Compression of the lip onto the substrate by a pressure-producing means **forms a good substrate-to-cover seal**, the space between the substrate 2 and the recess 9 of the cover 3 thereby defining a reaction chamber. Also shown in FIG. 2 are access ports 10 and 10' suitable for providing fluid inflow and outflow, and for the introduction of gases. Access to ports 10 and 10' is via septa 11 and 11' placed in a septum guides 12 and 12'. The access ports 10 and 10' comprise fluid transport means. It is to be understood that fluid transport means might take alternate forms in other embodiments of the invention. It is apparent that in the embodiment in FIG. 1, **two reaction chambers are formed by positioning two covers 3 and 3' over two molecular probe arrays** on the glass slide substrate 2. In other

> embodiments, the substrate has one molecular probe array, and one cover, and so only one reaction chamber is formed; alternatively, a substrate can have more than two molecular probe arrays on its surface, and **a corresponding number of covers can be used to form more than two reaction chambers in an assembly**. Further, a cover may have two or more recesses, one for each array on the substrate, so that one cover may form multiple chambers over multiple arrays."

The disclosure of the emphasized portions of this excerpt is that the reaction chambers are fluidically separated from each other, i.e., the reaction chambers are sealed. Moreover, there is no teaching or suggestion that "when the separating member is disposed in a second position with respect to the containing members, the at least two microarrays are fluidically coupled with each other," as recited in claim 2. Rather than teaching fluidic coupling, Schembri teaches away by emphasizing the importance of fluidic separation.

Claims 1-18 of Schembri similarly teach away. Claim 1 of Schembri is directed to:

"1. A device for conducting hybridization assays within an enclosed hybridization chamber, comprising:

a substrate having a surface with at least a portion of said surface representing a hybridization region, having an area of about 4 mm.sup.2 to about 500 mm.sup.2 wherein the substrate surface is functionalized with a mixture of a first silane providing surface --Si--R.sup.1 groups where R.sup.1 is a chemically inert moiety and a second silane providing surface --Si--(L).sub.n --R.sup.2 where L is a linking group, n is 0 or 1, and R.sup.2 is a functional group enabling binding of the oligonucleotide probes;

a plurality of oligonucleotide probes bound to the substrate surface within the hybridization region and arranged in a spatially defined and physically addressable manner;

a cover having a peripheral lip which **sealingly** contacts the substrate surface about the hybridization region, wherein the cover and the hybridization region **form an enclosure** having an interior space comprising a hybridization chamber having a height of about 50 .mu.m to about 500 .mu.m; and,

containing within the hybridization chamber, a sample fluid comprising a target molecule which may hybridize to a surface-bound molecular probe within the hybridization region, and wherein the sample fluid additionally comprises a surfactant of a type and present at a concentration effective to substantially reduce non-specific binding and promote mixing of components within the sample fluid.

[Claims 2-5 depend from claim 1 and recite elements that do not appear relevant.]

> "6. The device of claim 1, wherein the cover is a **plastic cover having a peripheral lip that contacts the substrate surface** about the hybridization region.

[Claim 7 depends from claim 1 and reciteselements that do not appear relevant.]

> 8. The device of claim 1, further including a fastening means for **immobilizing the cover on the substrate surface** and providing a **temporary, watertight seal** between the cover and the hybridization chamber.

[Claims 9-12 depend from claim 1 and recite elements that do not appear relevant.]

> 13. The device of claim 1, further including a fastening means for **immobilizing the cover on the substrate surface** and providing a **temporary, watertight seal** between the cover and the hybridization region.

[Claims 14-18 depend from claim 1 and recite elements that do not appear relevant.]

None of these claims (nor the ones not quoted) teach or suggest that "when the separating member is disposed in a second position with respect to the containing members, the at least two microarrays are fluidically coupled with each other," as recited in claim 2 of the present Application. Again, rather than teaching fluidic coupling, Schembri teaches away by emphasizing the importance of fluidic separation by, *e.g.*, reciting enclosures that are sealed and watertight.

Because elements of claim 2 are missing from Schembri, claim 2 is patentable. Moreover, since claims 3-9, 12, and 14 all depend from claim 2, they also are patentable for at least the same reasons stated above with respect to claim 2. Claim 16 is an independent claim that includes the same element quoted above with respect to claim 2, and therefore also is patentable for at least the same reasons.

Claim 28 is directed to a microarray processing system having "a first segment; a second segment in contact with the first segment; and a processing array positioned between the first segment and the second segment, and retained in place by the first and second segments." Schembri lacks these elements, and therefore claim 28 is patentable. In particular, Schembri teaches away by disclosing that the reaction chamber is formed between a cover and the array substrate. Specifically, Schembri teaches forming a reaction chamber "by bringing the inner

surface of the cover 3 into contact with the upper surface of the substrate 2." Column 11, lines 9-11. *See also, for example,* column 11, lines 14-15 ("Upon placement of the cover 3 onto the substrate 2, the lip 8 makes contact with the upper surface of substrate 2."); column 11, lines 16-19 ("Compression of the lip onto the substrate by a pressure-producing means forms a good substrate-to-cover seal, the space between the substrate 2 and the recess 9 of the cover 3 thereby defining a reaction chamber."); column 11, lines 38-10 ("Application of pressure to the outer face of cover 3 is required to form the seal between the lip 8 and the substrate 2.") (Note lip 8 is a lip of the cover 3.); and column 11, lines 53-62.

Applicants therefore request that the rejections of claims 2-9, 12, 14, 16, and 28 as anticipated by Schembri under 35 USC §102(e) be withdrawn.

Claim Rejections – 35 USC §103(a)

Claims 10, 11, 13, 15, and 29-33 have been rejected under 35 USC §103(a) as being unpatentable over Schembri, *et al.*, U.S. No. 6,258,593 in view of Rava, *et al.*, U.S. No. 5,545,531. Applicants respectfully traverse these rejections and request reconsideration.

Claim 10 depends from claim 2 (as well as from claims 8 and 9) and further recites that a "grid plate includes a plurality of grid elements determined by the one or more walls, wherein each of the at least two microarrays is fluidically separated from each of the other at least two microarrays by a grid element when the separating member is disposed in the first position, and wherein each of the at least two microarrays is fluidically coupled with the other at least two microarrays when the separating member is disposed in the second position." The Examiner states that Schembri teaches, *inter alia*, at least two microarrays fluidically separated from each other when a separating member is disposed in a first position and fluidically coupled with each other when the separating member is disposed in a second position, and refers to column 10, line 57 through column 11, line 37, and Figures 1&2, and claims 1-18 to support this statement. As noted above with respect to the patentability of claim 2, however, neither in these portions of Schembri, or elsewhere in Schembri, is there a teaching or suggestion of these elements. As noted above, rather than teaching fluidic coupling, Schembri teaches away by emphasizing the importance of fluidic separation. Neither, as also noted above, are the elements of claim 2 taught

or suggested by Rava. Because the elements are neither taught nor suggested by the references independently or in combination (and Applicants note also that there is no suggestion or motivation in either reference to combine them), claim 10 is patentable over the combination of Schembri and Rava. Claim 11 depends from claim 10, and is therefore patentable for at least the same reasons. Claim 13 and 15 both depend from claim 2 (and from claims 12 and 14, respectively), and also are therefore patentable for at least the same reasons as stated above with respect to claim 2. In particular, neither Schembri nor Rava, separately or in combination, teach or suggest, *inter alia*, that "when the separating member is disposed in a second position with respect to the containing members, the at least two microarrays are fluidically coupled with each other," as recited by claim 2. Claims 29-33 depend from independent claim 28. As noted above, Schembri neither teaches nor suggests, and in fact teaches away from, "a first segment; a second segment in contact with the first segment; and a processing array positioned between the first segment and the second segment, and retained in place by the first and second segments" as recited in claim 28. These elements are also lacking in Rava (and the Examiner does not suggest that these elements are found in Rava). Because the elements of claim 28 are lacking in each of the references, they are lacking in the combination and dependent claims 29-33 are therefore patentable over Schembri in view of Rava.

Applicants therefore request that the rejections of claims 10, 11, 13, 15, and 29-33 under 35 USC §103(a) as being unpatentable over Schembri in view of Rava be withdrawn.

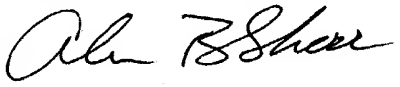
CONCLUSION

Applicant respectfully submits that this Amendment addresses all of the outstanding rejections, thereby placing the application in condition for immediate allowance. Allowance of this application is therefore respectfully requested.

Applicant's undersigned attorney requests an opportunity to interview this case with the Examiner at the Examiner's convenience. Applicant's undersigned attorney will contact the Examiner for this purpose.

If any fees are necessary to enable entry and consideration of this Amendment, such as fees under 37 C.F.R. §§ 1.16 or 1.17, please charge the fees to Deposit Account No. 01-0431. If an extension of time is needed that is not accounted for in the papers filed with this Amendment, then the extension is hereby requested. The necessary extension fee also may be charged to Deposit Account No. 01-0431.

Respectfully submitted,



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APPENDIX A
VERSION WITH MARKINGS TO SHOW CHANGES MADE

12. The apparatus of claim 2, wherein:

the plurality of microarrays include synthesized probe arrays wherein the probes comprise oligonucleotides.